

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS

1. (cancelled)
2. (cancelled)
3. (cancelled)
4. (currently amended) A convergence system for translating data received in an ATM format into a MAC format, the convergence system comprising:
 - a network connection provisioning module to grant or reject requests for a communication channel connection which is adapted to select a compression method from a plurality of selectable compression methods upon a grant of a connection, at least one of which includes mapping ATM cell addressing bits into MAC packet addressing fields;
 - an ATM segmentation module to buffer data which is incoming on the granted connection and to provide portions of the data to other modules depending, at least in part, upon the selected compression method;
 - a MAC header module to derive a header for a MAC packet from data in one or more incoming ATM cells having a common destination in combination with connection parameters including any selected header compression methods;
 - a MAC reassembly module to format data from the ATM segmentation module and the MAC header module into an outgoing MAC data packet having a header and a payload which represents incoming data from one or more ATM cells sharing a common destination; and

The convergence system of claim 1 wherein for at least one of the selectable compression methods the MAC reassembly module is further adapted to include payload data of a plurality of ATM cells sharing a common destination, and to encapsulate at least a portion of ATM header addressing data from at least one to the plurality of ATM cells in the payload of the outgoing MAC data packet.

5. (previously presented) The convergence system of claim 4 wherein for at least one of the selectable compression methods the MAC reassembly module is further adapted to include payload data of a plurality of ATM cells sharing a common destination and to encapsulate a virtual connection identifier from header of the plurality of ATM cells with the ATM payload data.

6. (currently amended) The convergence system of claim ~~4-4~~ wherein for at least one of the selectable compression methods the ATM segmentation module is further adapted to remove padding from an ATM trailer cell payload, and to provide payload data from the trailer cell to the MAC reassembly module.

7. (currently amended) The convergence system of claim ~~4-4~~ wherein for at least one of the selectable compression methods the ATM segmentation module is adapted to remove padding and CPCS and SSCS bytes from an ATM trailer cell payload prior to providing payload data from the trailer cell to the MAC reassembly module

8. (currently amended) The convergence system of claim ~~4-4~~ wherein for at least one of the selectable compression methods the ATM segmentation module is adapted to remove padding from an ATM trailer cell payload and append a padding pattern byte representative of a patter of the padding removed prior to providing payload data from the trailer cell to the MAC reassembly module.

9. (previously presented) A method for compressing and converting data packets initially in a first fixed-length packet format to a second packet format for transmission through a link, at least one of the initial data packets including a header containing overhead data appended by a communication system, the method comprising:
obtaining a plurality of incoming packets formatted in the first fixed-length format, said incoming packets having header addressing data, a first portion of said header addressing data comprising common header addressing data and a second portion of said header addressing data comprising header addressing data which is not common; and

preparing a second-format packet to convey payload data from the plurality of incoming packets by:

mapping the common addressing data into a header of the second format packet,

entering payload data from the plurality of incoming packets into a payload section of the second-format packet,

omitting the common addressing data from the payload of the second-format packet, and

encapsulating said second portion of said header addressing data of said incoming packets with said payload section of said second-format packet.

10. (cancelled)

11. (previously presented) The method for compressing and converting data packets of claim 9 wherein the first-format header is substantially mapped into the second-format header, and the entire first-format header is substantially omitted from the second-format payload.

12. (cancelled)

13. (previously presented) The method for compressing and converting data packets of claim 9 wherein the first format packets substantially comprise ATM cells, the second format packets substantially comprise MAC packets, and said second portion substantially comprises a virtual connection identifier.

14. (cancelled)

15. (currently amended) The method for compressing and converting data packets of claim 9 wherein the first-format packets comprise ATM cells and the second-format packets comprise MAC packets

16. (previously presented) The method for compressing and converting data packets of claim 9, and further comprising removing padding data from a trailer packet of the plurality of first-format packets.

17. (previously presented) The method for compressing and converting data packets of claim 16 wherein the first-format packets comprise ATM cells, the second-format packets comprise MAC packets, the trailer packet comprises an ATM trailer cell containing an end-of-message indication, and further comprising removing CPCS and SSCS bytes from the ATM trailer cell.

18. (previously presented) A method compressing data packets in a first fixed-length packet format to provide data packets in a second packet format for transmission through a link, the initial data packets including user data intended for an end user and a header containing overhead data appended by a communication system, the method comprising:

obtaining a plurality of incoming packets formatted in the first fixed-length format, the incoming packets having overhead data comprising an identical first portion and an unidentical second portion;

preparing a second-format packet to convey data from the one or more incoming packets by:

mapping the first-format header overhead data into a header of the second-format packet;

representing user data from the one or more first-format packets in a payload of the second-format packet;

omitting said identical first portion from the second-format payload first-format header overhead data mapped into the second-format packet header of the second-format packet; and

encapsulating said unidentical second portion in said payload into the second-format payload.

19. (previously presented) The method for compressing data packets of claim 18, and further comprising:

obtaining a first-format trailer data packet indicating that the trailer packet is a last packet of a block of packets having a common destination, the trailer packet including a payload having user data and overhead padding bytes;

including the user data from the trailer packet payload with payload data from the one or more first-format packets in the second-format payload, and

omitting at least some of the padding bytes from the second-format payload.

20. (previously presented) The method for compressing data packets of claim 19 wherein the second-format data packets comprise MAC packets, the first-format data packets substantially comprise ATM cells, and the trailer packet substantially comprises an ATM trailer cell having CPCS and SSCS bytes; and wherein

Padding cells are omitted from the MAC packet, and the CPCS and SSCS bytes from the ATM trailer cell are omitted from the MAC packet.

21. (cancelled)

22. (cancelled)

23. (previously presented) A method for compressing data packets from a first fixed-length packet format to a second packet format prior to transmission through a link, the data packets in said first fixed-length packet format including a header containing overhead data appended by a communication system, the method comprising:

determining, during setup of a particular packet block transfer, whether virtual path type switching or virtual connection type switching is to be used for the particular packet block transfer;

obtaining a plurality of incoming packets formatted in the first fixed-length format, the incoming packets having at least a portion of information in respective headers which is identical and constituting at least part of the particular packet block transfer;

preparing a second-format packet to convey data from the plurality of incoming packets by selecting, dependent at least in part upon a type of switching to be used as established during block transfer setup; either

mapping header data from one of the first-format packet headers into the second-format header, appending data indicative of user data in the first-format header data from the payload of the second-format packet, or

mapping a portion of header data from one of the first-format packet headers into the second-format header, omitting the mapped portion of header data from other parts of the second-format packet, and placing data indicative of remaining first-format header data along with payload data from at least some of the incoming packets into a payload section of the second-format header.

24. (cancelled)

25. (cancelled)

26. (cancelled)

27. (cancelled)

28. (cancelled)

29. (cancelled)

30. (currently amended) A method comprising:
receiving data in a plurality of first-format packets comprising common
header addressing data and formatted according to a first format, the first format being a
fixed length format; The method of claim 29, wherein said plurality of first-format packets
comprise ATM cells and said ATM cells comprise an ATM trailer, said ATM trailer
comprises a payload comprising user data and overhead padding bytes; and further
comprising:
selecting a compression process from among a plurality of compression
processes;

~~mapping at least some of said common addressing data to one or more fields of a second-format packet based, at least in part, on said selected compression process; combining payload data of said first-format packets in a payload of said second-format packet based, at least in part, on said selected compression process; omitting redundant common addressing data from said payload of said second-format packet;~~

including said user data in said payload of said second-format packet; and omitting at least a portion of said padding from said payload of said second-format packet.

31. (currently amended) The method of claim ~~29~~³⁰, and further comprising omitting from said payload of said second-format packet one or more of ~~padding, CPCS~~ bytes and/or SSCS bytes of an ATM trailer cell among said received packets.

32. (currently amended) The method of claim ~~29~~³⁰, and further comprising: ~~omitting from said payload of said second-format packet padding of an ATM trailer cell among said received packets; and~~ including in said payload of said second-format packet a padding pattern byte representative of said omitted packet padding.

33. (currently amended) The method of claim ~~27~~³⁰, wherein said second-format packet comprises a MAC packet, and further comprising deriving a MAC header for said MAC packet based, at least in part, on said common header addressing data.

34. (currently amended) The method of claim ~~27~~³⁰, and further comprising receiving a request for a communication channel connection, and wherein said selecting a compression process from among a plurality of compression processes further comprises selecting said compression process upon grant of said received request.

35. (currently amended) The method of claim ~~27~~30, and further comprising including at least a portion of said common addressing data in ~~a~~said payload of said second-format packet.

36. (currently amended) The method of claim ~~27~~30, wherein said first-format packets comprise a first-format packet header, and further comprising:

mapping said first-format packet header to a header of said second-format packet; and

omitting said first-format packet header from said payload of said second-format packet.

37. (currently amended) The method of claim ~~27~~30, and further comprising receiving at least some non-common addressing data in said received first-format packets; and

encapsulating at least a portion of said non-common addressing data in said payload of said second-format packet.

38. (currently amended) The method of claim ~~27~~30, and further comprising disposing a portion of first-format header addressing data common to said incoming packets in a single field of said second-format packet.

39. (currently amended) The method of claim ~~27~~30, and further comprising: receiving at one of more directional antennas signals transmitted from one or more subscribers;

decoding said received signals into received data having said second-packet format; and

reformatting said received data having said second-packet format into data having said first-packet format.

40. (previously presented) A method comprising:

receiving data in a plurality of first-format packets of at least a portion of a packet block transfer over a communication channel comprising common header addressing data and formatted according to a first format, the first format being a fixed length format;

combining payload data of said first-format packets in a payload of a second-format packet;

mapping header data from one of said first-format packet headers into header portion of said second-format packet, appending data reflective of user data in said first-format packets to said payload of said second-format packet, and omitting first-format header data from the payload of the second-format packet in response to said communication channel being provisioned for virtual connection switching; and

mapping a portion of header data from one of said first-format packet headers into a header of said second-format packet, omitting said mapped portion of header data from other portions of said second-format packet, and placing data reflecting remaining first-format header data with payload data from at least some of said incoming packets into said payload second of said second-format packet in response to said communication channel being provisioned for virtual path switching.

41. (cancelled)

42. (cancelled)

43. (cancelled)

44. (currently amended) The apparatus of claim ~~43~~⁴⁵, wherein said ATM cells comprise an ATM trailer, said ATM trailer comprises a payload comprising user data and overhead padding bytes, the apparatus further comprising:

means for including said user data in said payload of said second-format packet; and

means for omitting at least a portion of said padding from said payload of said second-format packet.

45. (currently amended) An apparatus comprising:
means for receiving data in a plurality of first-format packets comprising
common header addressing data and formatted according to a first format, the first format
being a fixed length format, wherein said plurality of first-format packets comprise ATM
cells;
means for selecting a compression process from among a plurality of
compression processes;
means for mapping at least some of said common addressing data to one of
more fields of a second-format packet based, at least in part, on said selected compression
process;
means for combining payload data of said first-format packets in a payload of
said second-format packet based, at least in part, on said selected compression process;
means for omitting redundant common addressing data from said payload of
said second-format packet; and
The apparatus of claim 43, and further comprising means for omitting from
said payload of said second-format packet one or more of padding, CPCS bytes and/or SSCS
bytes of an ATM trailer cell among said received packets.

46. (currently amended) The apparatus of claim ~~43~~45, and further comprising:
means for omitting from said payload of said second-format packet padding of
an ATM trailer cell among said received packets; and
means for including in said payload of said second-format packet a padding
pattern byte representative of said omitted packet padding

47. (currently amended) The apparatus of claim ~~44~~45, wherein said second-
format packet comprises a MAC packet, and further comprising means for deriving a MAC
header for said MAC packet based, at least in part, on said common header addressing data.

48. (currently amended) The apparatus of claim 44~~45~~, and further comprising means for receiving a request for a communication channel connection, and wherein said means for selecting a compression process from among a plurality of compression processes further comprises means for selecting said compression process upon grant of said received request.

49. (currently amended) The apparatus of claim 44~~45~~, and further comprising means for including at least a portion of said common addressing data in said payload of said second-format packet.

50. (currently amended) The apparatus of claim 44~~45~~, wherein said first-format packets comprise a first-format packet header, and further comprising:
means for mapping said first-format packet header to a header of said second-format packet; and
means for omitting said first-format packet header from said payload of said second-format packet.

51. (currently amended) The apparatus of claim 44~~45~~, and further comprising:
means for receiving at least some non-common addressing data in said received first-format packets; and
means for encapsulating at least a portion of said non-common addressing data in said payload of said second-format packet.

52. (currently amended) The apparatus of claim 44~~45~~, and further comprising means for disposing a portion of first-format header addressing data common to said incoming packets in a single field of said second-format packet.

53. (currently amended) The apparatus of claim 44~~45~~, and further comprising:
means for receiving at one of more directional antennas signals transmitted from one or more subscribers;

means for decoding said received signals into received data having said second-packet format; and

means for reformatting said received data having said second-packet format into data having said first-packet format.

54. (previously presented) An apparatus comprising:

means for receiving data in a plurality of first-format packets of at least a portion of a packet block transfer over a communication channel comprising common header addressing data and formatted according to a first format, the first format being a fixed length format;

means for combining payload data of said first-format packets in a payload of a second-format packet;

means for mapping header data from one of said first-format packet headers into a header portion of said second-format packet, appending data reflective of user data in said first-format packets to said payload of said second-format packet, and omitting all first-format header data from the payload of the second-format packet in response to said communication channel being provisioned for virtual connection switching; and

means for mapping a portion of header data from one of said first-format packet headers into a header of said second-format packet, omitting said mapped portion of header data from other portions of said second-format packet, and placing data reflecting remaining first-format header data with payload data from at least some of said incoming packets into said payload second of said second-format packet in response to said communication channel being provisioned for virtual path switching.

55. (cancelled)

56. (currently amended) The system of claim ~~55~~⁵⁶, the system further comprising a back-haul connection coupled to the one or more base stations to provide one or more of the CPE stations with access to an Internet service.

57. (currently amended) The system of claim ~~55~~66, wherein the system further comprises a video server capable of providing a video service to at least one of said CPE stations.

58. (currently amended) The system of claim ~~55~~66, wherein the system further comprises at least one residential gateway coupled to one of said CPE stations.

59. (previously presented) The system of claim 58, wherein the system further comprises at least one ATM switch coupled to segmentation module to provide at least one ATM service to one or more of the CPE stations.

60. (previously presented) The system of claim 59, wherein the ATM switch is adapted to provide at least one of a video service, a voice service and/or a data service or combinations thereof to said one or more of the CPE stations over said ATM switch.

61. (currently amended) The system of claim ~~55~~66, wherein said system further comprises a sectorized active antenna array coupled to said radio frequency transmitter.

62. (cancelled)

63. (cancelled)

64. (currently amended) The system of claim ~~63~~66, wherein said ATM cells comprise an ATM trailer, said ATM trailer comprises a payload comprising user data and overhead padding bytes, and wherein said MAC module is further adapted to:

include said user in said payload of said second-format packet; and

omit at least a portion of said padding from said payload of said second-format packet.

65. (currently amended) The system of claim ~~63~~⁶⁶, wherein said MAC module is further adapted to omit from said payload of said second-format packet one or more of padding, CPCS bytes and/or SSCS bytes of an ATM trailer cell among said received packets.

66. (currently amended) A system comprising:
one or more base stations comprising:
a segmentation module adapted to buffer data received in a plurality of first-format packets comprising common header addressing data and formatted according to a first format, said first format being a fixed length format, wherein said plurality of first-format packets comprise ATM cells;
a MAC module adapted to:
determine a compression process from among a plurality of compression processes;
may at least some of said common addressing data to one of more fields of a second-format packet based, at least in part, on said determined compression process;
combine payload data of said first-format packets in a payload of said second-format packet based, at least in part, on said determined compression process;
omit redundant common addressing data from said payload of said second-format packet; and

~~The system of claim 63, wherein said MAC module is further adapted to:~~

~~omit from said payload of said second-format packet padding of an ATM trailer cell among said received packets; and~~
~~include in said payload of said second-format packet a padding pattern byte representative of said omitted packet padding;-~~

a radio frequency transmitter to transmit said second-format packet encoded in a radio frequency signal; and
one or more customer premises equipment (CPE) stations comprising:
a radio frequency receiver to receive the radio frequency signal; and
a decoder to decode at least a portion of said second-format packet based, at least in part, on said received radio frequency signal.

67. (currently amended) The system of claim ~~55~~66, wherein said second-format packet comprises a MAC packet, and wherein said MAC module is further adapted to derive a MAC header for said MAC packet based, at least in part, on said common header addressing data.

68. (currently amended) The system of claim ~~55~~66, wherein said MAC module is further adapted to include at least a portion of said common addressing data in said payload of said second-format packet.

69. (currently amended) The system of claim ~~55~~66, wherein said first-format packets comprise a first-format packet header, and wherein said MAC module is further adapted to:

map said first-format packet header to a header of said second-format packet;
and
omit said first-format packet header from said payload of said second-format packet.

70. (currently amended) The system of claim ~~55~~66, wherein said first-format packets comprise at least some non-common addressing data, and wherein said MAC module is further adapted to encapsulate at least a portion of said non-common addressing data in said payload of said second-format packet.

71. (currently amended) The system of claim ~~55~~66, wherein said MAC module is further adapted to dispose a portion of first-format header addressing data common to said incoming packets in a single field of said second-format packet.

72. (previously presented) A system comprising:

one or more base stations comprising:

a segmentation module adapted to buffer data received in a packet block transfer over a communication channel, said packet block transfer comprising a plurality of first-format packets comprising common header addressing data and formatted according to a first format, said first format being a fixed length format;

a MAC module adapted to:

map a portion of header data from one of said first-format packet headers into a header portion of said second-format packet, include data reflective of user data in said first-format packets to said payload of said second-format packet, and omit first-format header data from the payload of the second-format packet if said communication channel is provisioned for virtual connection switching; and

map a portion of header data from one of said first-format packet headers into a header of said second-format packet, omit said mapped portion of header data from other portions of said second-format packet, and place data reflecting remaining first-format header data with payload data from at least some of said incoming packets into said payload second of said second format packet if said communication channel is provisioned for virtual path switching; and

a radio frequency transmitter to transmit said second-format packet encoded in a radio frequency signal; and

one or more customer premises equipment (CPE) stations comprising:

a radio frequency receiver to receive the radio frequency signal; and a decoder to decode at least a portion of said second-format packet based, at least in part, on said received radio frequency signal.